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THE RHODE ISLAND MEDICAL JOURNAL

Owned and Published by the Rhode Island Medical Society. Issued Monthly

VOLUME XV No. 1 | Whole No. 268 | PROVIDENCE, R. I., JANUARY, 1932 | PER YEAR $2.00 SINGLE COPY 25 CENTS

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VOLUME XV
NUMBER 1
Whole No. 268
PROVIDENCE, R. I., JANUARY, 1932
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ORIGINAL ARTICLES

PRACTICAL VALUE OF BLOOD CHEMISTRY, ESPECIALLY IN NEPHRITIS*†

JAMES P. O'HARE, M.D.
520 COMMONWEALTH AVE., BOSTON, MASS.

When your president asked me to speak about blood chemistry, I was secretly somewhat amused, because I felt that I knew why such a subject was chosen. Some at least among you were a bit uncertain or confused about the various tests. Do I express it too mildly if I say that others are just a bit "skeptical" about their importance? Such uncertainty, confusion and skepticism is very natural and springs from three chief sources: (1) the forgivable mere lack of knowledge of the significance of these tests, (2) the unforgivable notoriously poor technical determination and even poorer interpretation that prevails most everywhere, and (3) differences of opinion among authorities as to the normal values of the various substances.

What I propose to do is to discuss for you the merits of the more common blood substances that are being used in various places in the study of patients with nephritis. I trust that this will be informative and not too dry or technical.

Non-Protein Nitrogen (N.P.N.) From the name, it is of course obvious that this substance represents the sum total of nitrogen bodies in the blood not coagulated by the usual protein coagulants. It includes urea nitrogen, ammonia nitrogen, amino acid nitrogen, uric acid, creatin, creatinin and an undetermined fraction containing a heterogeneous group of polypeptids, amino acids, etc. Although nitrogen is excreted in the saliva, gastrointestinal juices, sweat and feces, the level of the non-protein nitrogen in the blood is largely the result of three factors: (a) the catabolism of food protein, (b) the catabolism of body protein, and (c) the output of urinary nitrogen. It is well to keep these facts in mind always because they have a very definite practical value.

Whereas in the normal individual and the patient who is only moderately ill, the non-protein nitrogen represents largely the effect of exogenous protein intake being eliminated by the kidneys, at times the other two factors play a most important part.

In patients who are vomiting severely and therefore absorbing no protein, the non-protein nitrogen of the blood may rise very materially, due to a breaking down of the patient's own tissue protein and to the small amount of water that gets through the kidneys. This is a very practical point because if one does succeed in getting into the patient more protein, the non-protein nitrogen paradoxically falls. Then again in conditions characterized by a very low output of urine (300 c.c. or less), such as in severe diarrheas, the non-protein nitrogen may rise to extremely high levels without necessarily any material change in the protein intake or in the ability of the kidney to take care of the nitrogen carried to it.

According to Peters and Van Slyke (page 266 Quantitative Clinical Chemistry) the normal values for the non-protein nitrogen range from twenty-five to forty milligrams per 100 c.c. On the other hand, Folin believes (New England Journal of Medicine, 1931, No. 204, page 1106) that twenty milligrams per 100 c.c. is the average normal and that twenty-five milligrams or over is abnormal. These last seem rather lower figures than customarily asumed. If corroborated, this might be of very great importance. It would at least decrease the importance of and perhaps eliminate the necessity of doing the more complicated tests of renal function, such as the Addis Ratio, the Urea Clearance, etc.

The non-protein nitrogen is elevated in the following conditions:

(1) nephritis
  (a) the early stages of an active process;
  (b) the late stages of a chronic hypertensive.

*Read at the meeting of the Providence Medical Association, June 1, 1931.

†From the Medical Clinic, Peter Bent Brigham Hospital, Boston.

(2) destruction of both kidneys from any source such as tuberculosis, pyelonephritis, pyonephrosis, hydronephrosis, etc. These lesions must, however, be bilateral because one normal kidney can ordinarily care for the normal protein metabolism.

(3) Even partial obstruction of urinary flow from prostatic enlargement or stricture may cause the blood nitrogen to rise.

(4) In toxemias of pregnancy, the non-protein nitrogen may be slightly higher than the normal for the pregnant woman whose usual level is somewhat less than that of the non-pregnant.

(5) Congestive heart failure elevates the non-protein nitrogen but this is never marked.

(6) In intestinal obstruction there may be a very high level due chiefly to starvation, increased protein destruction and dehydration.

On the whole, the non-protein nitrogen in the blood reaches high levels in only five important conditions:

(1) severe diarrheas;
(2) intestinal obstruction;
(3) severe acute nephritis with oliguria;
(4) severe chronic nephritis;
(5) marked destruction of both kidneys from any source.

The non-protein nitrogen is below normal practically only in pregnancy.

Of what practical value, then, is the non-protein nitrogen?

(1) Diagnosis:
  (a) In comatose patients a high non-protein nitrogen establishes the kidneys as the source of the coma.
  (b) In any hypertensive patient with albuminuria and cyllinduria, an elevated non-protein nitrogen (if cardiac decompensation is absent) indicates a diagnosis of chronic nephritis and not merely vascular hypertension or renal arteriosclerosis.
  (c) In tuberculosis or other non-nephritic disorders of the kidney a high non-protein nitrogen indicates a bilateral involvement of these organs. This may be of the utmost importance in deciding whether or not the patient should be submitted to an operation.
  (d) In doubtful cases a high non-protein nitrogen clinches the diagnosis of intestinal obstruction.
(2) Prognosis:
  (a) In chronic nephritis a non-protein nitrogen over 125 milligrams, particularly if it does not promptly respond to treatment, is a very grave sign and usually means death in a short time. It should be remembered, however, that if the patient has an acute exacerbation of a chronic nephritis following a toxic process of any sort, especially if the urine output is low, the prognosis may not be nearly so bad.
  (b) A patient with a high non-protein nitrogen is a poor surgical risk, particularly if the operation is to be on any part of the urinary tract.
(3) Treatment.
  The determination of the level of the non-protein nitrogen (or blood urea nitrogen) is the best way to determine the effect of your dietetic therapy in a case of renal insufficiency.

Urea Nitrogen (B.U.N.) The normal level of this substance is from nine to fifteen milligrams per 100 c.c. Practically everything that has been said about the non-protein nitrogen applies to this substance which normally forms forty to fifty per cent of the non-protein nitrogen. This parallelism may not be maintained with exactness because in advanced nephritis the per cent of most of the other non-protein substances except the undetermined nitrogen rises so little that the percentage of urea naturally increases.

Only one difference is worth mentioning and that is that in acute yellow atrophy, fatal poisoning by phosphorus, hydrazene or chloroform poisoning the non-protein nitrogen may be elevated markedly, whereas the urea is essentially normal or low. In these patients, the destruction of the liver prevents the manufacture of urea.

The question arises at this point whether the determination of the non-protein nitrogen or the blood urea nitrogen is to be preferred. Either method is satisfactory. The choice of method will largely be determined by the equipment of the laboratory and the amount of work to be done. If your method is satisfactory, keep it. Folin believes that the non-protein nitrogen has fewer sources of error. At the Peter Bent Brigham Hospital we have continued to use the old aeration method for

blood urea nitrogen determinations, largely, I believe, because we had found it satisfactory in the days when the non-protein nitrogen was not so simple and because where large numbers of tests are done simultaneously the blood urea nitrogen consumes less time and considerably less attention.

The ammonia nitrogen and the creatin may be dismissed quickly with the statement that the amounts in the blood stream are so small and they are so little influenced by disease processes that they may be ignored for all practical purposes.

Creatinin. This substance, which is apparently a waste product derived from the creatin of muscle, cannot be so easily dismissed, even though normally it is present in the blood in concentrations of one to two miligrams per 100 c.c. The level of this substance is peculiarly constant and not affected by any of the usual conditions that change the other non-protein nitrogen constituents. The one exception is in nephritis. The creatinin accumulates so slowly and so late that Myers proposed it as a test for prognosis. He stated that when the creatinin rose above five milligrams per 100 c.c. death was imminent within a short time. Of course, this applies only to chronic nephritis because in acute nephritis there may be a tremendous elevation without any such significance. I well recall a case of acute nephritis seen several years ago with a creatinin value of twenty-nine milligrams. In this man as soon as the oliguria passed there was a prompt drop to normal. Even in chronic nephritis I do not believe that its prognostic significance is as great as Myers indicated. Certainly, I have seen many cases with creatinin values of eight milligrams or more that have lived for many, many months. Furthermore, it has always seemed to me to be an unnecessary test. One ought to be able to tell from the usual findings of physical examination and the blood urea nitrogen that the patient was going to die. In the ordinary advanced nephritic patient, there is a fairly definite parallelism between the blood urea nitrogen and the creatinin which renders the latter unnecessary. In urologic conditions, however, Patch and Rubenowich have found that the creatinin rose little or none with marked elevation of blood urea nitrogen. In a known urologic condition which is not infrequently complicated by a true nephritis, the determination of both the blood urea nitrogen and the creatinin may be of some value in determining the presence of such a nephritis and the degree of such renal injury.

Uric Acid. This substance has been used for some time as a test of early functional change in the kidney. Its normal range is from 2 to 3.5 milligrams. It can be dismissed quickly with the statement of Folin (personal report) that it has no significance except in gout and perhaps in the leukemias.

Amino Acids. The normal range of these acids is from 5 to 8 milligrams per 100 c.c. They may be similarly dismissed with the statement that only in acute yellow atrophy and other diseases involving complete destruction of the liver has the amino acid determination been of value.

The so-called undetermined nitrogen fraction of the non-protein nitrogen may prove of considerable importance in the near future. Folin is finding that this fraction, almost negligible in normal blood, increases considerably as renal insufficiency develops.

At this point it is appropriate to say a few words to you about some of the newer tests that involve the synchronous determination of chemical constituents of the blood and urine. There are many of these including the Creatinin Coefficient, the old Ambard Coefficient, Addis Urea Ratio and the Urea Clearance Test. My experience with all of these except the first is limited. Part of this ignorance is voluntary and may be the result of previous experience with the tedious and useless determinations of the Ambard Coefficient and its modification in the McLean Index. Part may be due to the unfair comparisons that have been made between the Urea Clearance Test and the simple blood urea nitrogen on the basis of twenty-three milligrams as a standard normal B.U.N. instead of the commonly accepted fifteen milligrams standard. Lastly, I am unwilling to accept as a practical clinical test one like the Urea Clearance which requires six chemical determinations instead of the usual two for the simple non-protein nitrogen or blood urea nitrogen until I have become convinced of a far greater practical superiority of the former over the latter.

There are a few more blood chemical substances which are sometimes determined that are worthy of brief mention. The blood chloride, the normal range of which in whole blood is 450 to 500 milligrams, is done less frequently than formerly. Its level is high in nephritis, eclampsia, prostatic obstruction and anemia. The level is decreased in diabetes and fevers, especially pneumonia.

The Blood Sugar is fairly often found elevated in vascular hypertension. In 1930, working with the Glucose Tolerance Test, I showed that most of these patients acted like mild diabetics. In nephritis with hypertension there is usually a definite increase in blood sugar levels but this is of no practical importance.

At times in advanced nephritis, acidosis is present and this can be determined in the alkali reserve of the blood according to the Van Slyke and Cullen CO_2. *Capacity of the Plasma.* Changes in this take place usually pretty late in the disease and the correction of an acidosis (or alkalosis from vomiting) is of no permanent value.

The blood calcium, the normal range of which is from 9 to 11 milligrams, shows a decrease in infantile tetany, after parathyroidectomy and in severe nephritis.

The normal range of plasma cholesterol is from 150 to 200 milligrams. Higher levels are found in nephrosis, diabetes, lipemia (up to 3,600 milligrams), pregnancy and cholelithiasis. It is low in pernicious anemia.

Total Protein and the Albumin-Globulin Ratio. The determination of the total protein and albumin-globulin ratio is becoming more and more common, and is often of great clinical value. The normal range for the total protein is from 6 to 8 grams per 100 c.c., the albumin fraction from 3.7 to 5.2 and the globulin from 2 to 3.6. The albumin-globulin ratio varies from 1.4/1 to 2.2/1.

Some types of edema are very closely related to changes in this group of substances. In fact edema almost always occurs when the total protein reaches a level of 5.5% and the albumin 2.5%.

Decreases in the total protein may occur as a result of loss of albumin through the kidneys as in nephrosis, in starvation, from increased tissue catabolism in infections and in diabetes. A marked increase may occur in dehydration from severe diarrheas.

Conclusions

(1) It is most important to realize that the determination of any of these blood chemical constituents, although of great value, is still subordinate in importance to the history of the patient, his physical examination including his blood pressure, retinal findings and urinalyses, together with a thorough knowledge of the disease itself. These tests are no substitute for sloppy clinical medicine.

(2) They may lead one astray, because of
- (a) a poor selection of tests;
- (b) poor technic;
- (c) poor interpretation, and
- (d) dependence on single determinations.

IMPORANT POINTS IN THE PRACTICAL TREATMENT OF DIABETES*

By Alex. M. Burgess, M.D.
454 Angell St., Providence, R. I.

It is impossible in the short space of time allotted for this address to do more than touch the "high spots" in the matter of the modern treatment of diabetes. A review of the recent literature would not be appropriate. I have therefore chosen the above title rather than that announced on the card, which was "Recent Advances in the Treatment of Diabetes," and shall limit my discussion to those phases of the subject which seem to me of the greatest practical value to the general practitioner who must often cope with diabetes without the benefit of hospital facilities. This talk is but the cocktail that precedes the feast of learning that is to follow and I shall therefore try to make it "short and snappy."

To begin with let us consider the main objectives in our treatment. They are two: first, to maintain the physical and mental efficiency of the patient, and, second, to protect him against intercurrent disease and the consequences of his diabetes.

With these objectives in mind how shall we carry on the routine treatment of the uncomplicated case? First, to get the patient sugar-free we need not now institute starvation or near-starvation. A diet low in fats but reasonably high in carbohydrates will suffice; let us say for example carbohydrates 80, protein 50, fat 40. Such a diet with liberal doses of insulin—perhaps 20 units three times a day—will render many diabetics sugar-free in a few days. One can of course modify the diet to suit the case and vary the dosage of insulin as well. I shall spend no time on the methods of calculating diets in terms of carbohydrate, protein and fat, as these are well known to most of us and well described in text books and other publications. It is well to keep the

*Address to the Providence Medical Association, November 2, 1931.

fats particularly low in the initial diets especially if diacetic acid is found in the urine.

When the patient becomes sugar-free the ration is in the average case immediately increased and gradually brought up to a proper "maintenance diet." Insulin is of course given in sufficient quantity to maintain the patient sugar-free through all or most of the day. It is in the make-up of these "maintenance diets" that we have seen a great change in the last few years. The following table taken from a recent article by Dr. Joslin shows the average maintenance diets of his patients for the years indicated.

	Carbohydrates	*Proteins*	*Fat*	*Calories per kilo*
1915	26	54	76	18
1917	43	60	90	21
1923	71	58	123	34
1927	96	60	113	28
1931	144	68	90	32

These aptly illustrate the tendency within very recent years to raise the carbohydrate in the diet but not to raise the total calories. The fundamental conception of Allen that undernutrition is the mainstay of diabetic treatment still holds, and it is clear that a diabetic does best if his weight is kept a little below his former normal average. In general we may feel that, in the absence of other causes for loss of weight, as for example pulmonary tuberculosis, a diabetic who is below weight or losing weight is probably improving while one who is getting fat is probably getting worse as far as diabetes is concerned. With regard to the carbohydrate in the diet it has been shown by Sansum and others that this may be raised to a very high level, even over 200 grams a day, if sufficient insulin is given. Furthermore it is realized by most workers, and this we in the Rhode Island Hospital Diabetic Clinic have demonstrated many times to our own satisfaction, that the carbohydrate content of the diet can be raised if the fat is correspondingly lowered without increasing the patient's insulin requirement. On the whole the most satisfactory form of maintenance diet is that recommended very strongly by Rabinovitz, the high-carbohydrate low-calory diet. A diet for an average adult, containing 150 grams to 180 grams of carbohydrates but yielding only 1,700 calories is an example. On such a diet a patient has a relatively great freedom in the choice of foods, may include some bread and potato, has no need of special "diabetic foods," so called, and still will maintain his weight at a point a bit below his usual average. This type of diet is much more satisfactory to the patient than is its opposite, the high fat diet, which was formerly recommended by Newburgh and Marsh. This is well illustrated by the experience of a patient who was recently treated by my associate, Dr. Lawson. He had been at the University Hospital at Ann Arbor and was discharged October, 1929, on a diet containing carbohydrates 29, proteins 44 and fats 169— (1812 calories). This diet contained six eggs and large amounts of cream and butter and soon became so distasteful to the patient that he was forced to abandon it entirely. When he had been for a time on a diet of carbohydrates 112, protein 66 and fat 94 (1566 calories), he stated that he was much better satisfied in every way. Incidentally this patient illustrates another important point. He is but thirty-one years old and exhibits a well marked peripheral arterio-sclerosis. Rabinovitz has found that with a high-carbohydrate low-calory diet the blood cholesterol is always low and while it is not definitely proven it does seem probable that a high fat diet with a resulting high blood cholesterol over a long period of time may be an important factor in producing that condition which is the end of the present day diabetic, arterio-sclerosis.

I have spent a great deal of my allotted time on this matter of maintenance diet as it is a very important phase of treatment. Other matters to which I will call your attention are the continued importance of careful education of the patient, especially in the calculations of diets, urine testing, and what to do in case of accident or infection. As regards the use of insulin by the patient the importance of constantly shifting the site of injection should be stressed.

The treatment of acidosis and coma has been so often brought to your attention in detail that I will mention but two phases of the subject. First, that "massive" doses of insulin are probably less effective than smaller and more frequently repeated doses, a point of view which is supported by the recent work of Loeb, Nichols and Paige in rabbits. Second, and of the utmost importance, is the fact that in the treatment of actual coma the one measure which ranks with the use of insulin in importance in saving the life of the patient is the use of intravenous saline in large amounts. Insulin (with dextrose if facilities for repeated blood studies are not available) is usually added to the saline but these of course may be given separately and the

important point is that the patient is dehydrated and in what may be called "medical shock," and massive infusions may be as valuable as insulin itself in saving his life. Much has been said in this hall about infections and operations in the diabetic. I shall pass over this very important matter, merely mentioning to you the fundamental conception, with which you are all familiar, that the patient who takes insulin and carbohydrates is protected, as far as he can be, from acidosis and that a patient thus protected by this so-called "pre-coma" treatment may withstand a severe infection or operative procedure very much as he would were he not a diabetic.

Modern treatment of the diabetic requires a careful consideration of his cardio-vascular system because his problem, now that coma can be prevented, and the ravages of intercurrent disease so often offset, is to prevent the early onset of arteriosclerosis. Recent observations have established a few facts of importance. As I have already stated the relation of a high fat diet and a high blood cholesterol to arterial disease is yet to be definitely established though it seems close enough to justify the present day high-carbohydrate low-calory diet if there were no other reasons for its use. In connection with arterial disease, one point worth emphasizing is that when gangrene of the toes is present and the question as to conservative or radical treatment is to be decided an estimation of the local blood supply must be attempted. A good rule to follow is that with a good dorsalis pedis pulse there is always hope of improvement and conservative measures should be used, while if this pulsation is not found early mid-thigh amputation is probably necessary. With the use of Pachon's Oscillometer to determine the adequacy of blood flow to an extremity, a method widely used in France, I have had no experience.

The relation of the myocardium to the blood sugar level has recently been emphasized. Middleton and Oatway have described inverted T waves in the electrocardiogram folowing insulin injections and attacks of angina pectoris and even coronary thrombosis have been known to follow the use of insulin in a number of instances reported. It is safe to say that no diabetic with myocardial disease should be subjected to sudden or extreme reduction in blood sugar and that if insulin is used in such patients it must be given with the greatest caution. In most instances it is better to maintain such a patient with rather a high blood sugar and even a mild glycosuria than to risk the effect of a possible hypoglycaemia on his heart muscle.

A CASE OF INDUSTRIAL RADIUM POISONING WITH BONY CHANGES*

By Roland Hammond, M. D.

219 Waterman St., Providence, R. I.

Some five or six years ago the country was startled to read of the death of several girl workers in a New Jersey plant where radium was employed in painting clock and watch dials. These deaths were followed by others in Connecticut and elsewhere and it was realized that we had to deal with an entirely new industrial hazard.

These cases have been reported as radium necrosis because radio-active material was present in the luminous paint which is applied to the hands and numerals of the clock dials. Contrary to the popular notion the paint does not contain phosphorus, but is composed of zinc sulphide with small quantities of cadmium, copper and manganese to which is added a small quantity of a soluble radium salt. To this mixture is added gum arabic and distilled water. The paint is applied by means of a camel hair brush by dotting rather than drawing a brush over the dial. This technique requires a well pointed brush and for this reason the workers were accustomed to point the brush between the lips in order to speed up the work.

The first evidences of bone necrosis in the early cases were seen in the teeth and jaws. It seemed natural to regard the habit of pointing the brushes in the mouth as the cause of radium necrosis in the teeth and jaws. At first the deaths, which nearly all occurred in the jaw cases, were thought to be due to bacterial infection, since the girls all worked in the same room and frequently borrowed one anothers brushes. The appearance of cases in another state, however, led to the conclusion that radio-active material circulating in the system was responsible for the necrosis.

Radium poisoning following exposure to radio-active substances in industry reveals the symptoms and characteristics of a chronic constitutional dis-

*Read before the Rhode Island Medical Society, December 3, 1931.

Continued on page 9

THE RHODE ISLAND MEDICAL JOURNAL

Owned and Published by the Rhode Island Medical Society
Issued Monthly under the direction of the Publication Committee, 106 Francis Street

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Reprints will be furnished at the following prices, providing a request for same is made at time proof is returned: 100, 4 pages without covers, $6.00; each additional 100, $1.00; 100, 8 pages, without covers, $7.50; each additional 100, $2.80; 100, with covers, $12.00; each additional 100, $4.80; 100, 16 pages, without covers, $10.50; each additional 100, $3.00; 100, with covers, $16.00; each additional 100, $5.50.

SUBSCRIPTION PRICE, $2.00 PER ANNUM, SINGLE COPIES, 25 CENTS.

Entered at Providence, R. I. Post Office as Second-class Matter.

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EDITORIALS

ANENT BIRTH CONTROL

Bewildered by the astonishing strides made by science during the past few years, and astonished by the vocabulary and earnestness with which solicitors in the interest of welfare work pursue the nimble dollar, an ardent seeker after truth sought to learn the last word regarding Birth Control by a recent conversation with two eminent gynecologists fortunately and fortuitously met in a drug store. The query was upon the precise methods in vogue among the elite cognoscenti for contraceptives. These eminent consultants threw up their hands and disclaimed any knowledge of the mechanism of this much talked of and over-subscribed-to matter. One of them spoke of a case seen that very day in which the "very latest methods" had been employed but without success. The other in his extensive reading had never come upon a series of one thousand or even one hundred successful cases from any specialist or "clinic." It must be then that our knowledge of what is presumably an exact science is in a very unsatisfactory state. It is obvious also that the ardent exponents of this much talked of matter do not know what they are talking about and that information given to the public and even to physicians is spurious and absurd. And upon this subject volumes are being written and considerable sums of money are being spent—and to what purpose and to what end? We are forced to the conclusion that the place to which to apply for information, apparatus and statistics regarding birth control is the corner drugstore and not the medical profession, and we are much obliged to the eminent specialists for their honesty, frankness and privileged communication. If these conclusions are correct both profession and public should be informed that they are being imposed upon; if they are not correct, this JOURNAL should solicit articles for its columns which will inform said profession and public just what is the state of our knowledge and the suitable methods of contraception. If the nursing profession, and we are informed that the "clinics" are for the most part administered by nurses—is degenerating into the Sairey Gamp state this too is food for thought and needs investigation and remedy.

PROJECTION AT MEDICAL MEETINGS

As times change, and modern ingenuity develops better and more graphic methods of representation, one is not surprised that medical people should grasp these means of illustrating the results of research and clinical findings.

More and more papers given at our meetings are illustrated with splendid charts, excellent photographs, beautiful lantern slides, and motion picture films. Some of these are examples of the most painstaking care and meticulous attention to detail, with no little artistic use of the media of expression that are employed. These charts and slides which so often we see but too rarely admire, represent considerable individual expediture running often into two figures, while the motion picture films that we take for granted mean literally hundreds of dollars expended by the producer to illustrate and enhance his paper.

It is a pity that our Medical Library auditorium is not better equipped to bring into relief the full value of these demonstrations. It is disturbing to see beautiful preparations ruined before our eyes by improper methods or carelessness of projection. Priceless colored slides that cannot be replaced have been thus broken and burned, and only recently we have seen many costly slides so damaged, to say nothing of the detracting impressions to the spectators, when they are projected backwards, upside down, or improperly lighted through the inexperience of a makeshift operator who does not understand his apparatus.

Many members of our medical societies are quite expert in these matters, and it would seem timely that the various chairmen should appoint suitable committees of these men to devise ways and means for improvement of our auditorium with appropriate rewiring, and the purchase of proper apparatus for projection, as well as to provide more expert supervision of demonstrations at our meetings. The expense of such improvements would be trivial compared to that caused by frequent damage to the visual exhibits. And the demonstrations would be much more satisfactory, stimulating the preparation of technically excellent slides and films by the members, knowing that their efforts would not be nullified by inexperienced or careless showing.

CANCER

With the publication of what may be termed end results of the Coffey-Humber Extract in the treatment of more than four hundred cases of malignant disease another chapter of surgical history closes. It was not long ago that one of the foremost surgeons of the world proclaimed that the "cure of cancer was at hand." His predictions have not been fulfilled. A well known clinician who has been a student of this subject stated recently that since his early interest in cancer half a century ago he has not seen a single significant study of this subject. No experimental work which has come under his notice has been fruitful, no investigations have thrown any light upon the origin of cancer, and save the slogan "Operate Early," no information of value has been offered to the medical and surgical profession. A review of the Coffey statistics shows that nearly any surgeon of wide experience can offer even better figures in cases which did not receive this new treatment. It has been found that "Cancer Hospitals" and "Cancer Specialists" have no more successful methods of treatment or of investigation than the average careful and skilful surgeon, yet the encouragement offered those afflicted with malignant disease is at the present time a scandal in the profession. The frankness and sincerity of this notable report is most commendable. There is no attempt to mislead or extend hopes that in time the treatment will be further developed with the prospect of greater success. The melancholy facts are offered for what they are worth without comment. Nor, as the reader may learn, is there any discussion of what might be interpreted as success. Unfortunately there is no analytical study of comment on the possibility of probable expectation of life or comfort had the treatment not been given, and this leads us to the suggestion that there are a great many persons operated on for cancer who could not possibly be benefited.

Cancer frequently first shows itself in places that are relatively inaccessible. This and many other clinical facts often suggest that the primary focus of origin of malignant disease in a given case is never known. Add this to the fact that we have no information whatever as to the cellular or chemical biology of the cancer cell after a half century of intensive investigation and we get some idea of the present state of our knowledge and the success of our results. There is no opportunity for any claim as to supremacy of ability in the consideration of this disease, we may acknowledge but few successes, and these are but rare and occasional. It is to be regretted and deplored that no certificate of competence can be awarded to this conspicuous effort in the behalf of science because they have not received the promises.

INDUSTRIAL RADIUM POISONING

Continued from page 6

ease, the radio-active substance having a special predilection for osseous tissue, producing bone destruction and resulting in death from pyogenic infection. A minor surgical operation, such as the extraction of a tooth may bring on infection and ultimately death.

Emanations from radium have a profound effect on the blood system of the body and result in a marked destruction of lymphocytes, a rapid destruction of red corpuscles and a lack of regeneration in the bone marrow. Of particular interest in these cases is the appearance of recticulated cells.

Spontaneous fractures of the long bones have resulted from minor causes in these cases of radium poisoning and callus formation is always slow or sometimes absent, resulting in non-union. Spontaneous fractures have been produced in rabbits after a long period of radium injections. Too frequent X-ray examinations have been found to cause delay in the healing of fractures.

The appearance of pains in the legs is one of the earliest signs of the onset of the disease.

Examination includes a complete X-ray examination of all suspected bones, blood examination, electroscopic test to determine the rate of elimination of the radium from the system and examination of the stools to determine the rate of excretion. normally the body excretes 35% to 60% of its radium content during the first three or four days after the body has ceased to be exposed to the radium. A positive Wassermann reaction in some cases may explain why an individual is susceptible to radium necrosis.

The treatment is largely hygienic, particularly oral hygiene and care of the teeth, which must be kept clean and well filled. A calcium diet should be given, not so much calcium itself but such food and medication as will assist in the absorption and

deposition of calcium. Calcium metabolism is markedly interfered with in these cases. The bone not only does not receive calcium but gives it up. While radium can probably be eliminated from the body by the use of ammonium chloride given by mouth or by parathormone given intravenously, it probably does very little good in patients who have been radio-active for years. Acidosis must be watched for and calcium chloride given if symptoms intervene. Viosterol has proved of the greatest value, given in three to five drop doses three times a day. Plenty of sunshine or the Alpine lamp, a tonic such as iron, quinin, and strychnia, liver two or three times a week, a dish of apricots each day, cod liver oil and Blaud's pills, are useful adjuncts.

Surgical intervention is absolutely contraindicated. Even the extraction of a tooth has been known to start up infection which has resulted fatally. Once an infection begins in a bone this tissue is so devitalized that no treatment seems to be of any value. In those cases where eliminative treatment has been carried out, the bone destruction is so extensive that the ultimate outcome is in doubt. Infectious processes intervening in the course of the disease have been treated by autogenous vaccines, but the results have been of doubtful value.

There are several theories as to how external radiation acts on bone producing these pathological lesions. The most reasonable explanation is that the osteoblasts are more susceptible to radiation than the lamellae and are very easily killed. After the destruction of the cells the bone substance becomes devitalized and undergoes changes. Later on the periosteum breaks away from the bone. Productive osteitis has been observed in only two or three out of eighteen or twenty cases. Some persons who have been subjected to radium emanations tend to store radium in their systems, particularly in the bones, where it remains for years after the exposure has been removed.

The X-ray appearance of the bones varies with the bone involved. In the skull there are punched out areas of necrosis, resembling a metastatic malignancy or a multiple myeloma. The maxillae show a spotted or porous appearance. The spine and pelvis have a streaked appearance, with considerable increase of radiability often localized.

Report of a Case

Mrs. L. B., age 23, married, was seen September 9, 1930, referred to us by Dr. Frederick B. Flinn, of the Institute of Public Health, Columbia University, New York.

Seven years ago she began to work painting radium dials and continued at this work for four years. Following this she married and now has a healthy baby two years old.

In October, 1929, she began to have pain in the left hip without history of previous injury. In January, 1930, the pain became so severe that she had considerable difficulty in moving the left hip. There was no history of disease referable to teeth or tonsils, nor could any other focus of disease be found.

On February 20, 1930, she was admitted to the Orthopaedic Out-Patient Department of the Rhode Island Hospital. She walked with a slight limp and had pain on weight bearing. The left leg could be raised with the knee straight only to 40° when pain was felt in the thigh and hip. The hip could be flexed 10° to 15° further but with pain. Rotation of the left hip was limited to one-third normal. X-ray examination that day showed destruction and deformity of the head of the left femur with no pathology in the joint space indicating an infectious process. The back was strapped and she was given baking and massage, followed later by diathermy, but with no relief to pain. X-ray examination on March 1, 1930, showed considerable flattening of the head of the femur, suggestive of Legg's disease. On June 26th X-ray examination of the left hip showed more irregularity of the head of the femur with fragmentation of the epiphysis. The limp progressed, shortening of the leg was noticed and there was no relief from pain. She ceased to attend the clinic after July 3, 1930. During this period a diagnosis of radium poisoning was not considered, since the patient had not mentioned her previous work as a dial painter, because she did not appreciate the connection between her previous employment and the disease.

The diagnosis was not made until Dr. Flinn, in a systematic search of all workers who had been exposed to radium poisoning throughout the country, discovered this patient and initiated treatment, which he has constantly supervised ever since.

Physical Examination: A pale and pasty looking young woman with a marked limp from a short leg on the left side. Shortening is from ¾" to 1". The left hip was ankylosed in 20° of flexion deformity and there was considerable distortion and elevation of the left side of the pelvis.

X-ray examination showed further fragmentation and flattening of the head of the left femur, with partial luxation of the head outwards and upwards. The skull showed some changes in the vertex, suggestive of osteo-porosis.

Treatment: She was fitted to a ¾" high sole to compensate for the short leg and a leather spica to the pelvis and thigh to relieve pain and promote further ankylosis. The only medication was Viosterol three drops three times a day after meals.

Progress of the Case: It was about two months before the pain ceased and she began to gain in weight and color. In the meantime she complained of pain in the legs, which previously has been mentioned as an early sign of onset of the disease. X-ray examination of the tibiae revealed no evidence of bony involvement and the pain gradually subsided.

On January 17, 1931, Dr. Flinn made an electroscopic test and found a marked diminution in the amount of radium eliminated. Viosterol has been increased to five drops three times a day.

She has gained nine pounds in weight since April, 1931. The flexion deformity in the hip has been overcome and the distortion of the pelvis greatly improved. The pain is much less and she walks with a moderate limp. Dental work was performed a few months ago with no deleterious effects.

The ultimate outcome is still in doubt but at present everything seems favorable except for a slight loss of weight during the past month, and we are hoping for an arrest of the active disease.

CLINICAL-PATHOLOGIC CONFERENCE

Tuesday, November 24, 1931

Case reported by Dr. Clinton Westcott.

The following mimeographed history was passed out:

C. J. Age 57. Admitted Oct. 30, 1931. Discharged Oct. 31, 1931.

A 57 year old woman is brought into the hospital practically moribund. She is dyspneic, cyanotic, and her entire left side is paralyzed. History is obtained from a daughter. Patient was fairly well until last spring. At that time she had a bad cold which settled in her chest. She had a good deal of trouble breathing, and L.M.D. was called who said she had a "cold," "asthma" and a "bad heart," and that she might die most any time. At the beginning of this illness she slipped and had a bad fall, hitting the back of her head, but without loss of consciousness. She was sick for about 3 weeks. Since then the patient had felt pretty well and was gaining strength and was up and around. About 2 weeks before admission she developed a cold which settled in her chest. About this time she had burning urination with hematuria. She was feeling poorly, but on morning of admission was up and prepared breakfast. During the morning she was seized with a sudden faint feeling and fell over backwards. She was put to bed. It was noticed that she had dyspnoea, cyanosis, facial weakness and weakness of the left arm. A doctor advised hospitalization. The daughter also described some attacks that sounded like cardiac asthma. There were no previous hospital admissions.

F. H. Mother died of cancer.

M. H. Husband living well but separated. 5 normal children living.

P. H. Revealed that she had pleurisy with effusion when a little girl. Review of systems showed that she had worn glasses for years because of poor vision. She had dyspnoea on exertion for several years and had occasional swelling of feet. She also has had occasional precordial pains which did not radiate to arm. Menopause at 45 without bleeding since.

Physical Examination

A 60 year old lady propped up in bed practically moribund. She is dyspneic, cyanotic, and her chest is filled with moisture. Her entire left side is paralyzed. She is conscious but unable to speak clearly.

Eyes: Pupils equal—react to light.

Tongue: Protrudes in midline, although the left side of face is weak.

Lungs: No areas of dullness made out. Nothing can be heard on auscultation except moist bronchial and tracheal rales.

Heart: Borders not made out. Sounds obscured by moisture in lungs. Rate and rhythm regular. B. P. 110/60.

Abdomen: Moderately protuberant. No masses made out except for a slightly enlarged uterus.

Extremities: Left arm and leg paralyzed—flaccid.

Reflexes: Tendon jerks absent on left side of body—barely elicited on right. Babinski negative.

Patient was given atropine, adrenalin and morphia on admission. The moisture in her chest

cleared up somewhat and her color improved. However, she gradually lapsed into coma and died 13 hours after admission.

DR. WESTCOTT: "There is not a great deal to go on for a definite diagnosis, but something cerebral is suggested. It looks like cerebral hemorrhage or tumor. For hemorrhage we had no history of high blood pressure. On admission it was only 110/60. Cerebral thrombosis. The history of dyspnea, cyanosis, etc., might fit in with a cardiac condition with a possible embolus. With a tumor one would expect a history of a slowly progressing course. There is no record of that sort of thing. There is no record of eye ground examination. On the face of the evidence presented, I do not think it possible to arrive at a definite diagnosis of whether she had a cerebral hemorrhage, thrombosis or tumor."

Q.: "Did you make any diagnosis on the heart?"

A.: "I did not see the patient personally. She was dead before I saw her in the morning."

Q.: "Did you consider a hypertension and a kidney involvement in this condition?"

A.: "She may have had a hypertension previously, but when she was admitted the pressure was low."

DR. GERBER: "The rather indefinite history seems to me rather suggestive. For some time I have had my mind on primary carcinoma of the lungs, and in anyone over fifty developing chest symptoms I cannot help thinking of it."

Q.: "Did this flaccid paralysis remain or did it change?"

A.: "According to the record. That is all we have."

Q.: "Doesn't that point to the cord rather than to the brain?"

A.: "Usually, but I think you might get it from a brain lesion."

Q.: "Was there any sputum test made?"

A.: "No."

Demonstration of Post-mortem Findings

DR. CLARKE: "As far as the body cavities were concerned, the peritoneal cavity was essentially negative. In the left pleural cavity there were a lot of old fibrous adhesions, while in the right there was 250 c.c. of clear, straw colored fluid. We have the heart here. It is not particularly large. It weighs 280 grams, but when we come to examine it more closely we are struck by the discrepancy between the size of the left ventricle and the left auricle. You can see that, compared with the left ventricle, the auricle is enormous. When you look down where I cut off the top of this left auricle, you can see at the mitral valve it is reduced to a small slit. The mitral flaps are enormously thickened and calcified, so that she had an old mitral lesion with marked thickening, calcification and stenosis. The liver shows only a rather typical chronic passive congestion approaching the so-called nutmeg liver. The lungs also showed chronic passive congestion. The kidneys are rather small but the surface is not granular. It is dotted, however, with these rather large, deep scars which are characteristic of scars produced by arterio sclerosis. The cortex will average 4 m.m. in thickness, and histologically there is even less damage to the cortical tissue than one would expect grossly, so I think the kidney had nothing to do with her death. The most interesting thing is the brain. There was considerable excess fluid beneath the meninges. We found protruding out between the cerebellum and medulla an elongated, hard, white, firm tumor mass, probably 3 cm. in length, sticking out on the top of the medulla, and its calibre was about equal to the medulla and the end extended down into the foramen magnum. The tumor had a very peculiar shape; in the fourth ventricle there was a limb which went off at either side so that we had a "T" shaped tumor with the descending limb extending down to the foramen magnum. This occupied the position of the choroid plexus of the fourth ventricle. No choroid plexus could be found. We sectioned the rest of the brain and no other lesion was discovered, so it is quite difficult, I think, to explain the clinical story of a hemiplegia. The patient had two lesions, brain tumor and mitral stenosis, with moderate chronic passive congestion of all the organs. Histology shows the tumor to be a glioma."

Q.: "Which was the immediate cause of death?"

A.: "In my opinion the brain tumor was."

SOCIETIES

THE RHODE ISLAND MEDICAL SOCIETY
COUNCIL MEETING

The regular meeting of the Council was held on November 19, 1931, at 4:30 P. M., at the Medical Library, with the President, Dr. H. L. Barnes, in the chair.

The Treasurer presented the budget for the year 1932 as follows:

BUDGET, 1932

Collations and Annual Dinner	$ 700.00
Expenses of Secretary (Sec. hire)	75.00
Printing and postage	100.00
Fuel	600.00
Gas	30.00
Electricity	75.00
Telephone	125.00
City water	15.00
House supplies and expenses	450.00
House repairs	450.00
Janitor	720.00
R. I. MEDICAL JOURNAL	400.00
Safe Deposit	6.00
Treasurer's Bond	25.00
Librarian	1,660.00
Delegates to New England Medical Council	150.00
Delegate to American Medical Association	100.00
	$5,681.00

INCOME FOR 1932

Annual dues	$4,500.00
Interest from Harris Fund	280.00
Interest from Ely Fund	74.00
Interest from Frank L. Day Fund	135.00
Interest from Herbert Terry Fund	100.00
Interest from Davenport Fund	55.00
Interest from Morgan Fund	22.50
Providence Medical Association	450.00
Use of building	150.00
From JOURNAL	400.00
	$6,166.50
Balance in bank November 1, 1931	$ 796.22

HARRIS FUND

Mortgage Security Corp. of America	$ 110.00
Central Arizona Light & Power Co.	50.00
General Public Utilities Co.	120.00
	$ 280.00

J. W. C. ELY FUND

Southern California Edison Co.	$ 50.00
Mechanics National Bank	24.00
	$ 74.00

FRANK L. DAY FUND

Canadian National Railway	$ 135.00

HERBERT TERRY FUND

Missouri Public Service Co.	$ 100.00

JAMES H. DAVENPORT FUND

Monogahela West Penn. Pub. Service Co.	$ 55.00

JAMES R. MORGAN FUND

Missouri Light & Power Co.	$ 22.50

It was voted to place the following Fellows upon the retired list, by which they retain their active membership in the Society without payment of dues:

Dr. Joel A. Webb
Dr. W. P. Watson

It was voted that Dr. S. I. Kennison be dropped for non-payment of dues.

A letter from Dr. C. W. Skelton charging Dr. F. A. Ruest of Pawtucket with unethical conduct in that he endorsed a health bread in an advertisement appearing in the public press, was read. It was voted that the Secretary be instructed to invite Dr. Ruest to meet with the Council with reference to the matter.

A report from the Committee for Refunding Money Borrowed from Established Funds was called for by the chair, and in the absence of the chairman, Dr. J. W. Keefe, Dr. DeWolf stated that no meeting of the committee had as yet been held.

Adjourned.

Respectfully submitted,
J. W. LEECH, M.D., *Sec'y.*

HOUSE OF DELEGATES

November 19, 1931.

The meeting of the House of Delegates was called to order by the President, Dr. H. L. Barnes, at 5 P. M., November 19, 1931, at the Medical Library.

The Treasurer's report was presented by the Secretary, and on motion duly seconded the recommendation of the Council that the Treasurer's report be accepted and placed on file was passed.

A letter from the American Medical Association with reference to the Rhode Island Medical Society using its influence for the establishment of a Criminologic Institute in Rhode Island for the purpose of aiding public authority in the prevention and detection of crime was read by the Secretary. The President, Dr. H. L. Barnes, stated that he had talked with Dr. Round, Commissioner of Health, who states that his department is doing a similar work to a great extent, but welcomed any assistance which the Rhode Island Medical Society might give to the work. It was moved and seconded that the President appoint a committee of three to confer with Dr. Round with reference to possible improvements in the methods for prevention and detection of crime and to report back to the House of Delegates. It was so voted. The President then appointed Dr. Wm. H. Magill, Chairman, Dr. Arthur Ruggles, and Dr. H. A. Manchester as a committee.

It was moved by Dr. Hammond, seconded by Dr. Gray, that the President be empowered to appoint a committee of three to be known as the Expert Medical Testimony Committee, to consider means

of improving and formulating methods of procedure in the matter of expert medical testimony before the law courts, and to confer with a committee from the Rhode Island Bar Association looking to this end. It was so voted. The President then appointed Dr. J. E. Donley, Chairman, Dr. Chas. F. Gormly and Dr. Roland Hammond.

Dr. F. N Brown, editor of the RHODE ISLAND MEDICAL JOURNAL, stated that during his attendance at the conference of secretaries and editors held in Chicago under the auspices of the American Medical Association, a very interesting paper relating to medical insurance in its many phases had been presented to the conference, and he urged that thought be given to this very important subject.

It was voted to fix the dues of the ensuing year at $10.00.

Adjourned.

Respectfully submitted,

J. W. LEECH, M.D., *Sec'y.*

SPECIAL COUNCIL MEETING

A special meeting of the Council was held on Monday, November 30, 1931, at the Medical Library, the President, Dr. H. L. Barnes, presiding.

The Secretary read the following letter from Dr. F. A. Ruest:

"Dear Doctor: Yours of the 21st inst. at hand. I must confess that my good faith was surprised by the New England Bakery, as the agent came to my office, made an exhibit of different material composing the Swedish Health Bread, asking me if I would approve of such bread, and I said that I would, and I signed a paper to that effect, but this is the first time this appeared and that will be the last. I do not know Dr. Skelton, the complainant, but I do not blame him. As it will be impossible for me to be present at the meeting of the Council on November 30th, I will accept the verdict you will pronounce against me. Thanking you for calling my attention to the matter, I remain,

"Yours truly,

"F. A. RUEST, M.D."

It was moved and seconded that in view of Dr. Ruest's letter of regret and promise to avoid repetition of the use of his name endorsing a commercial product, the Secretary be instructed to write to Dr. Ruest in the following sense:

"Dr. Ruest: I have been instructed by the Council of the Rhode Island Medical Society at its meeting of November 30, 1931, to acknowledge the receipt of your letter of explanation and regrets relative to an endorsement of the Gentles' Swedish Health Bread, which appeared in the daily press. The Council is not inclined to look lightly upon an act of this kind but in view of your expression of regret and promise to avoid in the future a similar occurrence, the Council voted to drop the matter with no restrictions or abridgments of your standing in the Rhode Island Medical Society."

It was so voted.

A letter of resignation from the Rhode Island Medical Society from Dr. Frank B. Berry, now a resident of New York City, was presented by the Treasurer, and it was so voted to accept the same.

The President presented the request from Dr. Pinckney that the Rhode Island Medical Society adopt a memorial upon the retirement of Dr. Charles V. Chapin from the office of Superintendent of Health of the city of Providence. It was moved and seconded that Dr. Halsey DeWolf be appointed to draw up such a memorial to be presented to the General Session of the Rhode Island Medical Society. It was so voted.

It was the unanimous opinion of the councillors present that the Rhode Island Medical Society would be going outside its province in endorsing the candidacy of any aspirant for a position in the government of the city of Providence.

Adjourned

Respectfully submitted,

J. W. LEECH, M.D., *Sec'y.*

HOUSE OF DELEGATES

December 3, 1931.

A special meeting of the House of Delegates was held immediately after the general session of the Rhode Island Medical Society, and on motion duly seconded it was voted that the House of Delegates approve the resolution presented at the general session of the Society. So voted.

Respectfully submitted,

J. W. LEECH, M.D., *Sec'y.*

The regular quarterly meeting of the Rhode Island Medical Society was called to order at 4 P. M., December 3, 1931, at the Medical Library by the President, Dr. H. L. Barnes.

The minutes of the September meeting, the regular and special meeting of the Council, and the

regular meeting of the House of Delegates were read by the Secretary and approved.

The President made the following announcement of delegates appointed to the annual meeting of the New England Medical Societies:

Maine: Dr. Alfred M. Merriman, Bristol; Dr. Francis J. King, Woonsocket.

New Hampshire: Dr. Joseph H. Ladd, Exeter; Dr. Francis J. McCabe, Providence.

Vermont: Dr. Marden H. Platt, Riverside; Dr. Joseph E. Kerney, Providence.

Massachusetts: Dr. Charles A. McDonald, Providence; Dr. Earl J. Mathewson, Pawtucket.

Connecticut: Dr. L. B. Porter, Providence; Dr. John W. Sweeney, Providence.

The President also announced the appointment of Dr. Charles L. Phillips as member at large of the Board of Trustees of the Medical Library Building.

The President announced the deaths of the following Fellows since the last report:

Dr. W. H. Peters, died May 23, 1931.

Dr. T. J. McLaughlin, died August 8, 1931.

Dr. Jas. H. Bartley, died August 29, 1931.

Dr. W. F. Williams, died October 28, 1931.

and referred the matter to the Committee on Necrology for the usual action in June.

Program:

1. "Report of Case of Industrial Radium Poisoning with Bony Changes," Dr. Roland Hammond. This was illustrated by X-ray and stereopticon views, and discussed by Dr. Ridlon.

2. "Communicable Sore Eyes in the New Born," Dr. Anson B. Ingels, Epidemiologist, Rhode Island Public Health Commission. The discussion was opened by Dr. Brackett, who raised the question of the accuracy of the essayist's statistics unless they had been carefully analyzed and were based on similar conditions in different states. He felt that the conclusion that the essayist drew from his study that preventive work is at fault in Rhode Island was an unwarranted deduction and he felt rather that it indicated that the physicians of Rhode Island were more careful in reporting their cases than elsewhere. Dr. I. H. Noyes stressed the importance of prophylaxis and favored 1% solution of nitrate of silver. Dr. Sweeney felt that Rhode Island was being penalized in the paper for accurate reporting of its cases. Dr. Leech felt that the discrepancy between incidence in New York as compared with the incidence in Rhode Island as brought out by the essayist suggested the possibility that the figures from New York represented gonorrheal ophthalmia where the figures of Rhode Island represented the complete group of communicable sore eyes in the new born. Dr. P. P. Chase questioned the value of silver nitrate on account of the irritating action, and Dr. Hawkins felt the same way. In closing Dr. Ingels stated that his statistics had been checked and rechecked so that he felt certain of their accuracy.

3. "The Electrocardiograph as a Diagnostic Aid," Dr. Cecil C. Dustin. Discussion was opened by Dr. Fulton, who spoke of its practicability and of the simplification of the instrument since its introduction 25 years ago. He felt that it is of great value in differentiating the various heart conditions but should not be used as the sole and final authority. Dr. Burgess pointed out that many of the arrhythmias are explained by this instrument, as also cases of heart block.

The Secretary presented the following resolution prepared by Dr. Halsey DeWolf at the direction of the Council:

WHEREAS, Charles V. Chapin, M.D., a member of this Society and Superintendent of Health in the city of Providence, is about to retire from his position, and

WHEREAS, We, his fellow members of the Rhode Island Medical Society, delighting to honor him and desiring to express our admiration and affection for him, spread upon our minutes the following outline of his life as outstanding physician, distinguished man and beloved friend.

Bachelor of Arts, Brown University,
Doctor of Medicine, Bellevue Hospital Medical College,
Doctor of Laws, Yale University,
Doctor of Science, Brown University,
One time Professor of Physiology, Brown University,
Lecturer at Harvard University and Massachusetts Institute of Technology,
Fellow of the American Medical Association,
Fellow of the American Academy of Arts and Sciences,
Fellow of the Royal Society of Medicine (England),
Member and in 1926 President of the American Public Health Association,
Cited by "The Medical Officer" (London) for cementing relations between American and British public health authorities,
The Rhode Island Medical Society commemorated his birthday in 1927 by unveiling his portrait which honors the walls of this building,
First honorary member of Delta Omega Society,

honorary hygiene group comparable to Phi Beta Kappa,
Awarded the Mercellus Hartley Gold Medal by the National Academy of Science, thus becoming one of eight men in the world so honored,
The first recipient of the Sedgewick Memorial Medal, awarded by the American Public Health Association for distinguished service in public health work,
During the World War, member of the Medical Advisory Board, American Red Cross,
Member of the Massachusetts Association of Board of Health,
Member of the Society of Medical Officers of Health (England),
First President of the American Epidemiological Society,
Associate Editor *American Journal of Hygiene,*
Associate Editor *Preventive Medicine,*
One time President Providence Medical Association,
One time President Rhode Island Medical Society.

This record is compiled that all, while personally recognizing his worth, may know, in concrete form, the nature of his accomplishments and the recognition these have received from the whole civilized world.

In our Society, as repeated winner of the Fiske Fund Prizes, as wise and constructive President, as helpful councillor for many years, he leaves an indelible impression.

In the city, his two greatest achievements lie. First, in lifting Providence from a condition of well night medieval squalor in 1884, to the hygienic and sanitary perfection of today; and second, in the founding of our City Hospital and its later organization, in which he played so important a part.

In the world, his outstanding contribution to mankind is the revolutionary development of medical asepsis with its application to the control of contagious diseases.

His life work was accomplished only with great labor on his own part, and violent opposition on the part of others; medical, political and lay groups fought him and his ideas long and valiantly, only to surrender at the last; and, here is the wonder of it, to surrender with love and admiration for their opponent. His is the personality which disarms the enemy only to make the friend; and

WHEREAS, Charles V. Chapin, M.D., as recited above, having accomplished much, having received great honors from many lands, while he lived amongst us as a trusted neighbor, a valued friend and, withal, a noble gentleman, we, the members of the Rhode Island Medical Society do hereby

RESOLVE: That, in view of his splendid record of achievement, he has our most sincere respect and admiration and, from a more personal aspect, our love and hope that he may live long and happily to reap the reward which is his due, as, being in every sense, "the Beloved Physician."

It was moved and seconded that the resolution be adopted and referred to the House of Delegates for definitive action.

4. "The Use of the In-dwelling Ureteral Catheter," Dr. Eric Stone. In discussion Dr. Kerney indicated his favor for large sized catheters, namely, above 6 French. Dr. Turner pointed out that this treatment can be used for a month or more, the catheter being changed at four to nine days intervals.

Adjourned.

Collation was served following the meeting.

Respectfully submitted,
J. W. LEECH, M.D., *Sec'y.*

HOSPITALS

RHODE ISLAND HOSPITAL

The regular Clinical-pathologic Conferences will be held at the Rhode Island Hospital on the second and fourth Tuesdays of each month.

WM. O. RICE, M. D.
Asst. Superintendent.

PROVIDENCE LYING-IN HOSPITAL

The regular monthly staff meeting of the Providence Lying-In Hospital was held November 12, 1931, at 8:30 P. M. There were sixteen members present at the meeting. Dr. I. H. Noyes gave a report on the previous month and reported many interesting cases pertaining to the hospital.

Dr. Richard J. Neil completed his service as resident December 1, 1931, and is now practicing medicine in Methuen, Mass. Dr. Martin F. Buell is now resident physician. Dr. David R. Brodsky, who recently completed his gynecological training at the Carney Hospital in Boston, Mass., is now senior interne.

Dr. Jarvis D. Case of Hartford, Conn., who recently completed a rotating service at the Hartford Hospital is now interning at the Providence

Lying-In Hospital. Dr. Orland F. Smith is affiliating for one month from the Rhode Island Hospital. Dr. Allen P. Joslin, from Tufts Medical School, is affiliating for one month. Dr. Ernest H. Joy completed his affiliation for one month and is now at St. Joseph's Hospital, Lowell, Mass.

Very truly yours,

EDWARD S. BRACKETT, M.D.,
Secretary.

ANNOUNCEMENT

NEW ENGLAND HEART ASSOCIATION

The New England Heart Association plans to continue the program of last winter with a series of monthly discussions of various aspects of cardiovascular disease, Wednesdays at 4:30 P. M. at the Boston Medical Library.

The program of succeeding meetings follows:

December 2, 1931.

II. Congenital Cardiovascular Disease.
1. Anatomy and Physiology. (Dr. A. C. Ernstene.)
2. Clinical types and diagnosis. (Dr. Howard B. Sprague.)
3. Prognosis (Follow-up Studies). (Dr. Hyman Green.)
4. Discussion (Dr. Kenneth D. Blackfan.)

January 6, 1932.

III. Rheumatic Heart Disease.
1. Rheumatic Infection—General Summary. (Dr. T. Duckett Jones.)
2. Diagnosis and Clinical Features. (Dr. William Breed.)
3. Treatment. (Dr. William H. Robey.)
4. Discussion. (Dr. John Lovett Morse.)

February 4, 1932.

IV. Bacterial Endocarditis.
1. Pneumococcus Endocarditis. (Dr. Frederick T. Lord.)
2. Other types of Acute Bacterial Endocarditis. (Dr. Cadis Phipps.)
3. Streptococcus Viridans. (Dr. Hyman Morrison.)
4. Discussion. (Dr. James Hitchcock.)

March 2, 1932.

V. Effect on the Heart of Diphtheria, Scarlet Fever and Tuberculosis.
1. Pathology. (Speaker unassigned.)
2. Clinical Aspects of the Heart in Diphtheria and Scarlet Fever. (Dr. Edwin Place.)
3. Tuberculosis and the Heart. (Dr. John B. Hawes, 2nd.)
4. Discussion. (Dr. Conrad Wesselhoeft.)

April 6, 1932.

VI. Cardiovascular Syphilis.
1. Pathology. (Dr. Tracy Mallory.)
2. Diagnosis. (Speaker unassigned.)
3. Treatment. (Speaker unassigned.)
4. Discussion. (Dr. Samuel A. Levine.)

May 11, 1932.

VII. Thyrocardiac Disease and Other Endocrine Cardiovascular Relationships.
1. Hyperthyroid Heart Disease and Management of Therapy. (Dr. Lewis Hurxthal.)
2. Hypothyroid Heart Disease and Management of Therapy. (Dr. James H. Means.)
3. Other Endocrine Cardiovascular Relationships. (Dr. Fuller Albright.)
4. Discussion. (Dr. Gerald Blake.)

June 1, 1932.

VIII. Non-Valvular Heart Disease. ("Chronic Myocarditis.")
1. Pathology. (Dr. Shields Warren.)
2. Diagnosis. (Dr. Henry A. Christian.)
3. Treatment. (Dr. Henry Jackson.)
4. Discussion. (Dr. Francis W. Palfrey.)

All physicians are welcome.

HOWARD B. SPRAGUE, M.D.,
270 Commonwealth Avenue,
Chairman of the Program Committee.

MISCELLANEOUS

DIPHTHERIA TOXOID (DIPHTHERIA ANATOXIN-RAMON) IN INFANCY

Joseph Greengard, Chicago (*Journal A. M. A.*), vaccinated 117 infants, ranging in age from 4 days to 2 years, against diphtheria with two 1 cc. doses of commercial diphtheria toxoid. Complete immunity, as measured by the Schick test, was obtained in 98 per cent of the infants. The appearance of immunity was quite rapid, a considerable proportion showing a negative Schick reaction two weeks after the second injection. Reactions were noted in only 2 of 147 cases; both of these were very mild.

In a small group in whom the persistence of immunity was tested, one case occurred in which the Schick reaction turned positive six months after vaccination. Three cases of clinical diphtheria occurred during the period of investigation. One of these appeared in a vaccinated child with a succeeding negative Schick reaction. On the basis of his observations the author concludes that immunization against diphtheria, as measured by the Schick test, can be produced rapidly and safely in a high proportion of infants by the use of two 1 cc. injections of diphtheria toxoid.

GASTRO-INTESTINAL ALLERGY

According to Albert H. Rowe, Oakland, Calif. (*Journal A. M. A.*, Nov. 14, 1931), the frequency of gastro-intestinal symptoms arising from food allergy necessitates the writing of a new chapter in gastro-enterology. This is emphasized by his experience, which indicates that food allergy explains much gastric and intestinal distress, some of which has eluded satisfactory diagnosis in the past. The following points must be remembered in the discussion of the subject: Food allergy probably produces more symptoms in the gastro-intestinal tract than in any other part of the body, because of the contact of foods with its tissues. Gastro-intestinal food allergy may originate at any time of life. It occurs most frequently in infancy and childhood. After its onset it is apt to persist for many years. The various alimentary symptoms probably arise from edema of the mucous membrane and spasm of the smooth muscle, which produce disturbances in peristalsis and in function. It is likely that lesions similar to urticaria, canker sores, dermatitis and angioneurotic edema also occur in the gastric and intestinal mucosa. Hepatic reactions are not infrequent. Such reactions occur experimentally, especially in the dog. Allergic reactions in the urogenital tract, including the uterus, may also produce abdominal distress and pain. Symptoms may be immediate, delayed or cumulative. After the elimination of the causative foods, symptoms may disappear in a few hours or may require from ten to fourteen days. In fact, symptoms at times persist for three or four weeks until the specific proteins are finally disengaged from the cells in the sensitized tissues. The frequency of mild alimentary symptoms due to food allergy must be mentioned. Such symptoms are undoubtedly more frequent than the marked or severe ones. Patients may be sensitive to a large number and variety of foods in the same way that they may be sensitive to all types of pollens. Various foods, moreover, produce varying symptoms in the same patient. Skin reactions by the cutaneous as well as by the intradermal method are infrequent in food allergy, especially after infancy. This is especially true in gastro-intestinal allergy. The diagnosis and treatment of gastro-intestinal food allergy must be made (1) by means of diet trial for which the author's "elimination diets" are useful; (2) with the help of the patient's history of food dislikes and disagreements, and (3) with the aid of any skin reactions which occur and which can be shown by actual diet trial to be indicative of allergy.

RATS AS CARRIERS OF MEXICAN TYPHUS FEVER

Herman Moser, M. Ruiz Castaneda and Hans Zinsser, Boston (*Journal A. M. A.*), recovered virus indistinguishable from the ordinary virus of tabardillo, or Mexican typhus fever, from the brains of rats trapped in Mexico City in locations where cases of typhus fever had occurred, and during a period in which a moderate epidemic of typus fever was prevalent. The work is a direct confirmation of the evidence obtained indirectly through fleas by Dyer of the existence of a reservoir of typhus fever in rats and confirms the original suggestion made by Maxcy, in 1926, in regard to the epidemiology of the North American disease. The belief that the virus recovered from the rats is identical with that of Mexican typhus fever is based on typical reactions in guinea-pigs, with elevated temperature and testicular swelling, the presence of characteristic *Rickettsia*, immunity reaction and the development of Weil-Felix agglutination reactions in inoculated rabbits. The manner of possible transmission of the disease from rats to man is being investigated by an analysis of the insects found on the rats and in the houses where typhus fever has occurred. This work is being continued in Mexico City and will be reported on at a later date. Also, the frequency with which rats infected with typhus fever can be found cannot be judged until many more animals have been collected, this communication being merely in the nature of a preliminary report.